

a sensor for sensing intrinsic activity in a patient's heart and generating a sensed signal;

a¹ a pace generator generating pacing signals on demand in response to pacing commands;

a metabolic demand detector detecting a metabolic demand of said patient and generating a metabolic demand parameter;

a respiration detector detecting a respiration of said patient and generating a respiration parameter;

an adjuster circuit receiving said metabolic parameter and said respiration parameter and adjusting said metabolic parameter cyclically in accordance with said respiration parameter to generate an adjusted metabolic parameter which follows said respiration; and

a controller receiving said sensed signal and said adjusted metabolic parameter to generate said command, whereby said pace generator generates said paces dependent on the patient's respiration.

2. (Amended) The pacemaker of claim 1 wherein said metabolic demand detector detects minute volume as said metabolic demand parameter [is dependent on a minute volume].

3. (Amended) The pacemaker of claim [1] 2 wherein said respiration detector is coupled to said metabolic demand detector and is arranged to generate said respiration parameter based on said minute volume [respiration parameter is based on a minute volume].

4. (Amended) The pacemaker of claim 1 wherein adjusting circuit includes adding and subtracting means which adjust said [generates said adjusted] metabolic parameter by cyclically adding and subtracting a constant value from said metabolic parameter, in accordance with said respiration parameter.

5. (Amended) The pacemaker of claim 1 wherein said adjusting circuit includes means for varying [varies] said adjusted metabolic parameter linearly between a baseline and one of a maximum value and a minimum value.

6. (Amended) The pacemaker of claim 5 wherein said means for varying said adjusted metabolic parameter is adapted to use said metabolic parameter as said base line [base line corresponds to said metabolic parameter].

7. (Amended) The pacemaker of claim 5 wherein said adjusting means is further adapted to adjust [adjusts] said adjusted metabolic parameter based on one of said patient's exercise level, age and fitness level.

Amend claim 10 as follows:

10. (Amended) An implantable pacemaker comprising:

a cardiac sensor [for sensing] that senses intrinsic cardiac activity in a patient's heart and generating sensed signals;

a pacing generator [for generating] that generates pacing pulses in response to commands;

a respiration sensor [for sensing] that senses a respiration of said patient and
[generating] generates corresponding respiration signals; and

a controller receiving said sensed and respiration signals and generating in
response said commands[.];

wherein said controller generates said commands for pacing said heart at a base
pacing parameter, said pacemaker further comprising a rate adjusting circuit that
adjusts said commands to pace said heart at an adjusted rate from said base rate, said
adjusted rate being dependent on said respiration signal.

Cancel claims 11 and 12 and amend claim 13, 14 as follows:

11 13. (Amended) The pacemaker of claim [12] ~~10~~¹⁰ wherein during a period between
[adding and subtracting said level to] increasing and decreasing said base rate, said
adjusting circuit is arranged to maintain [leaves] said base rate unchanged.

12 14. (Amended) The pacemaker of claim 10 wherein said [adjusting] adjusting circuit
includes means that adjusts said adjusted rate gradually between an upper limit and a
lower limit.

In claim 16, line 1 change "11" to --10--.

Amend claim 25 as follows:

25. (Amended) The pacemaker of claim 24 wherein said metabolic detector [demand parameter is dependent on the minute volume] detects minute volume as said metabolic parameter.

Amend claim 28, 29, 30, 32, 33, 34 as follows:

26. (Amended) The pacemaker of claim 27 wherein said metabolic [parameter is a minute volume] demand detector is arranged to detect a minute volume as said metabolic demand parameter.

27. (Amended) The pacemaker of claim 28 wherein said metabolic demand detector [generates] is adapted to detect said minute volume from said transthoracic impedance signal.

28. (Amended) The pacemaker of claim 29 wherein said controller [generates] is adapted to derive said base rate from said minute volume.

30. (Amended) The pacemaker of claim 31 wherein said adjusting means includes means that decrease [decreases] the level of adjustment with increased exercise level.

31. (Amended) The pacemaker of claim 31 wherein said exercise detector [detects] is adapted to detect said level of exercise from said metabolic demand.

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A6 34. (Amended) The pacemaker of claim 10 further [comparing] comprises a memory for storing an age of said patient.

Amend claim 38 as follows:

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38. (Amended) A method of controlling the pacing rate of a pacemaker implanted in a patient, said method comprising the steps of:

generating a base pacing parameter for said pacemaker;

detecting a respiration for the patient;

adjusting said base pacing parameter by increasing and decreasing said base pacing parameter in synchronism [in accordance] with said respiration to derive an adjusted pacing parameter; and

generating pacing commands in accordance with said adjusted pacing parameter.

Amend claim 44 as follows:

A8 44. (Amended) The method of claim 43 wherein said respiration has peaks and valleys and wherein said peak value is selected to substantially correspond [substantially corresponds] timewise to said peak.

33